

WHAT IS CLAIMED:

1. A low power automated transfer switch for residential use to automatically switch power between a primary source of utility power and a backup source provided by an engine generator, the automated transfer switch comprising:

a single electrical panel housing:

a first circuit breaker connected to the primary source;

a second circuit breaker connected to the backup source;

at least a third circuit breaker connected to a load;

a pair of electrically interlocked power relays electrically connected between the at least third circuit breaker and the first circuit breaker and the second circuit breaker; and

control logic operably connected to the power relays and including a state machine controller to control the operation of the power relays to switch from the primary source to the backup source in the event that the control logic detects a decrease in at least one measurable characteristic of the primary source greater than a predetermined value.

2. The low power automated transfer switch of claim 1, wherein the state machine controller is a field programmable gate array (FPGA).

3. The low power automated transfer switch of claim 1, wherein the first circuit breaker and the second circuit breaker are rated for less than 10 kilowatts.

4. The low power automated transfer switch of claim 1, wherein the control logic provides control signals to start and stop the backup source.

5. The low power automated transfer switch of claim 4, wherein the control logic monitors at least one measurable characteristic of the backup source after it is started before switching

from the primary source to the backup source.

6. The low power automated transfer switch of claim 1, wherein the control logic monitors the primary source via an optical coupling to detect the at least one measurable characteristics.

7. The low power automated transfer switch of claim 1, further comprising an operator panel positioned on a front of the electrical panel.

8. A method of connecting a low power automated transfer switch for residential use to automatically switch power between a primary source of utility power and a backup source provided by an engine generator, the method comprising:

providing a single electrical panel for the automated transfer switch;

shutting off power in at least a portion of a main electrical panel that distributes the primary source of utility power within the residence;

wiring a first circuit breaker housed in the electrical panel for the automated transfer switch to a circuit breaker in the main electrical panel;

wiring a second circuit breaker housed in the electrical panel for the automated transfer switch to a connection on the backup source;

wiring at least a third circuit breaker housed in the electrical panel for the automated transfer switch to at least one load in the residence; and

turning power back on to the main electrical panel, such that the low power automated transfer switch is installed without requiring that power be physically disconnected from the main electrical panel.

9. The method of claim 8, wherein the first circuit breaker and the second circuit breaker are rated for less than 10 kilowatts.

10. The method of claim 8, further comprising:

wiring control signals from control logic housed in the electrical panel to the backup source to start and stop the engine generator.

11. A method of operating a low power automated transfer switch for residential use to automatically switch power between a primary source of utility power and a backup source provided by an engine generator, the method comprising:

providing a single electrical panel for the automated transfer switch, the single electrical panel housing having:

a first circuit breaker connected to the primary source;

a second circuit breaker connected to the backup source;

at least a third circuit breaker connected to a load; and

a pair of electrically interlocked power relays electrically connected between the at least third circuit breaker and the first circuit breaker and the second circuit breaker;

detecting a decrease in at least one measurable characteristic of the primary source; and

in response, using a state machine to automatically control the operation of the power relays to switch from the primary source to the backup source.